



JDW

PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/712,257	
	Filing Date	November 14, 2003	
	First Name(s) Inventor	Lothar ZIPFEL	
	Art Unit	1711	
	Examiner Name	J. M. COONEY	
Total Number of Pages in This Submission	9	Attorney Docket Number	037110.52632US

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Documents <input type="checkbox"/> Response to Missing Parts/ Incomplete Application  <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <b>Executed Declaration Under 37 CFR 1.132 of Dr. Lothar Zipfel</b>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	CROWELL & MORING LLP		
Signature			
Printed Name	J.D. EVANS/CHRISTOPHER T. MCWHINNEY		
Date	January 31, 2006	Reg. No.	26,269/42,875

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.			
Signature			
Typed or printed name		Date	January 30, 2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

JDE:CTM:mdm (2709933)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 10/712,257  
First Named Inventor : Lothar ZIPFEL  
Filed : November 14, 2003  
TC/A.U. : 1711  
Examiner : J. M. COONEY

Confirmation No. : 8056

Docket No. : 037110.52632US  
Customer No. : 23911

Title : Non-Combustible Polyesterpolyol And/or Polyetherpolyol  
Preblend for Producing Foamed Products

**DECLARATION UNDER 37 C.F.R. § 1.132**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Dr. Lothar Zipfel, hereby declare as follows:

1. I am a citizen of Germany, residing at 30880 Laatzen, Ilseder Weg 11,  
Germany.

2. From 1972 to 1978, I studied chemistry at the University of Hannover,  
and I received my doctorate in 1981.

3. Starting on September 1, 1982, I was employed at what was then Kali-  
Chemie, and I have been the manager of Foam Application Technology at Solvay  
Fluor GmbH in Hannover since 1990.

4. I am familiar with the invention described in Claims 1-6 of the above-captioned patent application, which relates to a non-combustible premix for the production of foamed products.

5. In our laboratories, we have demonstrated that the combination of a binary blowing agent (propellant mixture) and a phosphorus compound surprisingly increases the flashpoint of a polyol-based mixture resulting in a non-combustible product that is safe to transport and safe to handle.

6. The laboratory tests that are described herein were performed under my direction and supervision. According to our research, by combining commercially-available polyols with precisely 10-20 wt.% of a phosphorus compound and 4-35 wt.% of a binary blowing agent, a non-combustible premix is surprisingly formed. The non-combustibility can be demonstrated by measuring the flash point of the premix.

28.12.05 364  
Dir a Herzog HFP384 flame point apparatus, and the parameters for this testing were defined by the standard ISO 13736.

8. A binary blowing agent mixture comprising 93 wt.% 1,1,1,3,3-pentafluorobutane (hereinafter abbreviated "PFB") and 7 wt.% 1,1,1,2,3,3,3-heptafluoropropane (hereinafter abbreviated "HFP") was determined to be soluble in commercially available polyols such as Fox-o-pol VD280S, Fox-o-pol N470, Daltolac R530, PEC 400 and PPG 400.

9. An additional blowing agent comprising 1,1,1,3,3,-pentafluoropropane (herein after abbreviated "PFP") can be added to the binary blowing agent described above to form a blowing agent mixture that also is soluble in commercially available polyols.

10. Table 1 shows the compositions of inventive pre-mixtures comprising a spray polyol, a catalyst, water, a phosphorus compound, and a binary blowing agent, wherein the phosphorus compound tris-chloroisopropyl phosphate is abbreviated "TCPP" and the phosphorus compound triethyl phosphate is abbreviated "TEP." The amount of each constituent in Table 1 is listed in grams.

11. In the three premix compositions shown in Table 1, the phosphorus compound comprises 11.7, 11.8 and 11.7 wt.%, respectively, and the binary blowing agent comprises 22.2, 21.9 and 22.2 wt.%, respectively, of the total mixture.

12. For Premixes 1 and 2, the expected flash point was between -10 and 0°C, and for Premix 3, the expected flash point was -10°C. Surprisingly, Premixes 1-3 of Table 1 were non-combustible mixtures and no flash point was measured.

Table 1. Inventive, Non-Combustible Premix Compositions

<u>Constituent (grams)</u>	<u>Premix 1</u>	<u>Premix 2</u>	<u>Premix 3</u>
Spray Polyol #1	101.7	101.7	101.7
Catalyst Mix #1	8.35	8.35	8.35
Water	2.5	2.5	2.5
TCPP	20	20	0
TCPP:TEP (50:50)	0	0	20
PFB:HFP (97:3)	37.9	29.6	37.9
PFP	0	7.5	0
Expected Flash Point (°C)	-10°C-0°C	-10°C-0°C	-10°C
Measured Flash Point	None	None	None

13. In a further experiment, the polyol Tercarol<sup>®</sup>, which is a polyether polyol available from Dow Chemical Company, was treated with various amounts of propellant. The amount of propellant with respect to the amount of polyol (wt.%) is shown in the first column of Table 2. For each concentration of propellant, four separate samples were made and the flash point was measured for each sample.

14. The second and third columns of Table 2 show the flash points of comparative samples wherein the propellant is either PFB or a 93:7 wt.% mixture of PFB and HFP. No phosphorus compound was added to these comparative samples. The fourth and fifth columns of Table 2 show the flash

points of the liquid polyol mixtures of columns two and three further comprising 10 wt.% of the phosphorus compound TCPP.

15. As shown by the data in Table 2, the flash points of the various mixtures in columns 2 and 3 (no phosphorus compound) decreases with increasing propellant concentration. This is true for both the samples comprising PFB as well as the samples comprising the binary blowing agent mixture of PFB and HFP.

Table 2. Effect of Propellant and Phosphorus Compound on the Flash Point of Liquid Polyol Mixtures

<u>Propellant/Polyol(%)</u>	<u>PFB</u>	<u>PFB:HFP</u> <u>(93:7)</u>	<u>PFB+TCPP</u>	<u>PFB:HFP</u> <u>(93:7)+TCPP</u>
Concentration (%)	Temperature (°C)			
2.1	53.0	58.5	58.5	56.0
4.2	35.5	38.5	36.5	57.5
6.6	24.5	27.0	23.5	33.5
8.7	20.0	20.0	14.5	44.0
11.1	13.5	14.5	14.5	--
17.7	1.5	--	3.5	--
25.0	-3.5	--	-4.0	No flash point

16. As shown in column 4 of Table 2, the addition of TCPP to the mixtures comprising only the propellant PFB failed to markedly improve

(increase) the flash points of these samples. By way of example, for the samples comprising 6.6%, 8.7% and 11.1% propellant, the flash point decreased 4.1%, decreased 27.5%, and only increased 7.4%, respectively, as a result of the addition of the phosphorus compound. A decrease in the flash point is an undesired result.

17. As shown in column 5 of Table 2, the addition of TCPP to the samples comprising the binary blowing agent mixture of PFB and HFP surprisingly and dramatically increased the flash points of these samples. We have discovered that the addition of specific proportions of a binary blowing agent (propellant mixture) and a phosphorus compound improves (increases) the flash point of the polyol-based mixture. The following examples from Table 2 are illustrative.

18. The addition of TCPP to the comparative sample comprising 2.1% binary blowing agent with respect to the polyol (corresponding to a binary blowing agent composition outside of the claimed range of 4-35%) resulted in a decrease in the flash point for this sample.

19. Surprisingly, the addition of TCPP to the samples comprising 6.6% and 8.7% binary blowing agent with respect to the polyol resulted in a substantial increase in the flash point for these samples (+24% and +120%, respectively). Significantly, an increase in the flash point was observed although the concentration of the binary blowing agent (propellant) was increasing.

20. Typically, one would expect that if a critical amount of blowing agent is exceeded, a premix comprising the blowing agent would be readily combustible because of the low flash point of the mixture. For example, the samples comprising 25% HFC only (not a binary blowing agent) were extremely volatile either with or without the addition of the TCPP, and had flash points of -3.5 and -4°C, respectively. However, the addition of TCPP to the sample comprising 25% binary blowing agent with respect to the polyol surprisingly resulted in non-combustible sample.

21. The invention relates to a non-combustible premix. The cited references made of record in the Office Action do not teach or suggest that it is possible to obtain a non-combustible polyol-based premix, much less teach or suggest the critical proportions of a binary blowing agent (4-35 wt.%) and a phosphorus compound (10-20 wt.%) required to achieve such an unexpected result.

22. It would not have been obvious to one having ordinary skill in the art to prepare a non-combustible polyol-based premix having the claimed proportions of additives.

23. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true, and further, these statements were made with the knowledge that willful statements and the like, so made, are punishable by fine or imprisonment, or both, under § 1001 of



Title 18 of the United States Code, and that such willful false statements may  
jeopardize the validity of the patent application or any patent issued thereon.

Respectfully Submitted,

Date: 28.12.05

L. Zipfel  
Dr. Lothar Zipfel